- 1. A heat transfer fluid composition consisting essentially of: (a) 10% to 90% by volume of at least one terpene component; and (b) 90% to 10% by volume of at least one silicone component, in complementary proportional percentage amounts to retain the composition in its liquid phase at any temperature in the entire range from about 0°F to about -200°F.
- 2. The heat transfer fluid composition of Claim 1, wherein the at least one terpene is selected from the group consisting of acyclic terpenes, monocyclic terpenes and bicyclic terpenes.
- 3. The heat transfer fluid composition of Claim 2, wherein the acyclic terpenes are composed of geraniolene; myrcene; dihydromyrcene; dimene and allo-ocimene.
- The heat transfer fluid composition of/Claim 2, wherein the monocyclic terpenes 4. are composed of ρ-menthane; carvomethene; methene, dihydroterpinolene; dihydrodipentene;  $\alpha$ -terpinene;  $\gamma$ -terpinene;  $\alpha$ -phellandrene; pseud $\phi$ limonene; limonene; d-limonene; 1-limonene; d,1-limonene: isolimonene; soterpinolene; terpinolene; β-phellandrene; β-terpinene;  $\alpha$ -cyclogeran/olene;  $\beta$ -cyclogeraniolene;  $\gamma$ -cyclogeraniolene; cyclogeraniolane; pyronane; methyl-γ-pyronene: 1-ethyl-5,5-dimethyl-1,3-cyclohexadiene: 2-ethyl-6,6-dimethyl-1,3cyclohexadiene;  $2-\rho$ -menthene;  $1(7)-\rho$ -methadiene;  $3,8-\rho$ -menthene;  $2,4-\rho$ -menthadiene; 2,5-ρ-menthadiene; 1(7),4(8)-ρ-methadiene; 3,8-ρ-menthadiene; 1,2,3,5-tetramethyl-1-3cyclohexadiene; 1,2,4,6-tetramethyl-/,3-cyclohexadiene; 1,6,6-trimethylcyclohexene and 1,1dimethylcyclohexane.
- 5. The heat transfer fluid composition of Claim 2, wherein the bicyclic terpenes are composed of norsabinane; northujene; 5-isopropylbicyclo[3.1.0]hex-2-ene; thujane;  $\beta$ -thujene;  $\alpha$ -thujene; sabinene; 3,7-thujadiene; norcarane; 2-norcarene; 3-norcarene; 2-4-norcaradiene;

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carane; 2-carene; 3-carene;  $\beta$ -carene; nonpinane; 2-norpinene; apopinane; apopinane; apopinene; orthodene; norpadiene; homopinene; pinane; 2-pinene; 3-pinene;  $\beta$ -pinene; verbenene; homoverbanene; 4-methylene-2-pinene; norcamphane; apocamphane; campane;  $\alpha$ -fenchane;  $\alpha$ -fenchane; santenane; santane; norcamphene; camphenilane; fenchane; isocamphane;  $\beta$ -fenchane; camphene; 2-norbornene; apobornylene; bornylene; 2,7,7-trimethyl-2-norbornene; santene; 1,2,3,-trimethyl-2-norbornene; isocamphodiene; camphenilene; isofenchene and 2,5,5-trimethyl-2-norbornene.

- 6. The heat transfer fluid composition of Claim 1, wherein the at least one terpene is selected from the group consisting of d-limonene, terpinolene,  $\alpha$ -terpinene,  $\gamma$ -terpinene, myrcene, 3-carene, sabinene,  $\alpha$ -pinene and camphene
- 7. The heat transfer fluid composition of claim 1, wherein the at least one silicone is selected from the group consisting of silicones having viscosities less than 10.0 cSt.
- 8. The heat transfer fluid composition of Claim 1, wherein the terpene component consists essentially of d-limonene and the silicone component consists essentially of a silicone having a viscosity of 1.6 cSt.
- 9. The heat transfer fluid composition of Claim 1, wherein the composition further consists of at least one antioxidant and a stabilizing agent.
- 10. A low temperature heat transfer process using a heat transfer fluid composition comprising the steps of:
- a. transferring/thermal energy from the heat transfer fluid composition to a cooling fluid such that the heat transfer fluid composition is cooled to a temperature between about 0° and about -200°F;
- b. transferring thermal energy from an object to be cooled to the heat transfer fluid composition; and,

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c. repeating (a) and (b) until said object is cooled to the desired temperature;

wherein said heat transfer fluid composition consisting essentially of: (a) 10% to 90% by volume of at least one terpene component; and (b) 90% to 10% by volume of at least one silicone component; in complementary proportional percentage amounts to retain the composition in its liquid phase at any temperature in the entire range from about 0°F to about -200°F.

- 11. The process of Claim 10, wherein the thermal energy is transferred from the heat transfer fluid composition to at least one cryogenic fluid or a refrigerant.
- 12. The process of Claim 10, wherein the process is operated under conditions such that the temperature of the heat transfer composition ranges from about 0°F to between about 150°F and about -200°F.
- The process of Claim 10, wherein the at least one terpene is selected from the group consisting of acyclic terpenes, monocyclic terpenes and bicyclic terpenes.
- 14. The process of Claim 13, wherein the acyclic terpenes are composed of geraniolene; myrcene; dihydromyrcene; ocimene and allo-ocimene.
- The process of Claim 13, wherein the monocyclic terpenes are composed of  $\rho$ -menthane; carvomethene; methene, dihydroterpinolene; dihydrodipentene;  $\alpha$ -terpinene;  $\gamma$ -terpinene;  $\alpha$ -phellandrene; pseudolimonene; limonene; d-limonene; 1-limonene; d,1-limonene; isolimonene; terpinolene; isoterpinolene;  $\beta$ -phellandrene;  $\beta$ -terpinene; cyclogeraniolane; pyronane;  $\alpha$ -cyclogeraniolene;  $\beta$ -cyclogeraniolene;  $\gamma$ -cyclogeraniolene; methyl- $\gamma$ -pyronene; 1-ethyl-5,5-dimethyl-1,3-cyclohexadiene; 2-ethyl-6,6-dimethyl-1,3-cyclohexadiene; 2- $\rho$ -menthadiene; 3,8- $\rho$ -menthadiene; 2,4- $\rho$ -menthadiene; 2,5- $\rho$ -menthadiene; 1(7),4(8)- $\rho$ -methadiene; 3,8- $\rho$ -menthadiene; 1,2,3,5-tetramethyl-1-3-cyclohexadiene;

1,2,4,6-tetramethyl-1,3-cyclohexadiene;

1,6,6-trimethylcyclohexene

and

## 1,1-dimethylcyclohexane.

- 16. The process of Claim 13, wherein the bicyclic terpenes are composed of norsabinane; northujene; 5-isopropylbicyclo[3.10]hex-2-ene; thujane;  $\beta$ -thujene;  $\alpha$ -thujene; sabinene; 3,7-thujadiene; norcarane; 2-norcarene; 3-norcarene; 2-4-norcaradiene; carane; 2-carene; 3-carene;  $\beta$ -carene; nonpinane; 2-norpinene; apopinane; apopinene; orthodene; norpadiene; homopinene; pinane; 2-pinene; 3-pinene;  $\beta$ -pinene; verbenene; homoverbanene; 4-methylene-2-pinene; norcamphane; apocamphane; campane;  $\alpha$ -fenchane;  $\alpha$ -fenchane; santane; norcamphane; camphenilane; fenchane; isocamphane;  $\beta$ -fenchane; camphene;  $\beta$ -fenchane; 2-norbornene; apobornylene; bornylene; 2,7,7-trimethyl-2-norbornene; santene; 1,2,3,-trimethyl-2-norbornene; isocamphodiene; camphenilene; isofenchene and 2,5,5-trimethyl-2-norbornene.
- The process of Claim 10, wherein the at least one is selected from the group consisting of d-limonene, terpinolene,  $\alpha$ -terpinene,  $\gamma$ -terpinene, myrcene, 3-carene, sabinene,  $\alpha$ -pinene and camphene and the at least one silicone is selected from the group of silicones having viscosities less than 10.0 cSt.

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